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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,751	03/24/2004	Thomas E. Bolander	GP-303471	4303

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EXAMINER	
TRAN, BINH Q	
ART UNIT	**PAPER NUMBER**
3748	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/807,751	BOLANDER ET AL.	
	Examiner	Art Unit	
	BINH Q. TRAN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/31/2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the amendment filed October 31, 2005.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, and 14-24 are rejected under 35 U.S.C. 102 (b) as being anticipated by Klopp et al. (Klopp) (Patent Number 6,148,613).

Regarding claims 1, and 14, Klopp discloses a method of reducing exhaust emission from a catalytic converter (e.g. 70, 72, 74, 84, 86, 88) apparatus of a vehicle, the apparatus including at least one catalytic converter (e.g. 70, 72, 74, 84, 86, 88), each of the at least one catalytic converter having a catalyst brick (e.g. 70, 72, 74, 84, 86, 88) positioned within a predefined length of the vehicle, said method comprising directing exhaust in upstream (32) and downstream ("e.g. ***bottom of the container 12***") directions (See Fig. 6a-6b) to pass more than once through the predefined length through at one of the at least one catalyst brick (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 2, Klopp further discloses that at least while the exhaust has a low exhaust pressure (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 3, Klopp further discloses that the at least one catalyst brick includes at least one catalyst, said method further comprising effecting a transfer, to the at least one catalyst, of heat remaining in exhaust that has passed at least once through the predefined length (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 4, Klopp further discloses that wherein effecting a transfer of heat comprises directing exhaust to flow between the catalyst brick and a canister wall of said at least one catalytic converter (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 5, Klopp further discloses that wherein directing exhaust to pass more than once through the predetermined length comprises directing exhaust to pass at least twice through said at least one catalyst brick converter (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 6, Klopp further discloses that directing exhaust to pass at least twice through said at least one catalyst brick comprises directing exhaust to pass at least twice through the same catalyst brick (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 7, Klopp further discloses that the catalytic converter apparatus includes a plurality of catalytic converters connected in parallel to receive the exhaust, said method further comprising directing the exhaust through a series connection of the converters for a predetermined time period after starting the vehicle (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 8, Klopp further discloses the step of closing said series connection and opening said parallel connection after said time period (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 15, Klopp further discloses that wherein said at least one directing element effects a transfer of heat from the exhaust to one of said at least one converter (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 16, Klopp further discloses that wherein said at least one catalyst brick comprises at least one cross-sectional area, said at least one directing element comprising a sleeve forming an inlet to said catalyst brick and that directs the exhaust toward at least a portion of said at least one cross-sectional area (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 17, Klopp further discloses that wherein said sleeve comprises a door that opens or closes in response to a pressure of the exhaust (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 18, Klopp further discloses that wherein said sleeve comprises at least one of a cylindrical shape and a truncated conical shape (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 19, Klopp further discloses that wherein said at least one directing element comprises a bowl mounted at least partly over an outlet of said catalyst brick (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 20, Klopp further discloses that wherein said at least one catalyst brick comprises at least one cross-sectional area and said bowl directs the exhaust toward at least a

portion of said at least one cross-sectional area (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 20, Klopp further discloses that wherein said bowl directs the exhaust to flow alongside said catalyst brick (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 22, Klopp further discloses that wherein said bowl comprises a door that opens or closes in response to a pressure of the exhaust (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 23, Klopp further discloses that at least one canister in which said at least one catalyst brick is mounted, said at least one directing element comprising at least one end wall of said canister (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Regarding claim 24, Klopp further discloses that wherein said at least one catalytic converter comprises a plurality of converters connected in parallel, said at least one directing element comprising a switching assembly that alternates connection of said converters between said parallel connection and a series connection of said converters (e.g. See Figs. 5-8; col. 6, lines 56-67; cols. 7-8, lines 1-67; col. 9, lines 1-18).

Claims 9-13, and 25-34 are rejected under 35 U.S.C. 102 (b) as being anticipated by Frederiksen et al. (Frederiksen) (Patent Number 6,312,650).

Regarding claims 9 and 25, Frederiksen discloses method of reducing exhaust emission from a catalytic converter apparatus including a catalytic converter (e.g. 5, 5i, 5ii) having a catalyst surface area to which the exhaust is exposed while making a pass-through of the

apparatus, said method comprising effecting a transfer, to a central core (e.g. 6, 6i, 6ii, 24) of said catalyst surface area and of said converter, of heat remaining in the exhaust after being exposed to said central core (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 10, Frederiksen further discloses the step of limiting said catalyst surface area to less than a total surface area to which the exhaust is exposed during the pass-through of the apparatus, and effecting a transfer of heat from the total surface area to the limited catalyst surface area (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 11, Frederiksen further discloses the step of effecting a transfer of heat from the total surface area comprises effecting a transfer of heat from at least one of a canister wall and a ring of catalytic surface area surrounding the limited catalytic surface area of said catalytic converter (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 12, Frederiksen further discloses the step of effecting a transfer of heat is performed while the exhaust completes the pass-through (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 13, Frederiksen further discloses the step of effecting a transfer performed at least while the exhaust has a low exhaust pressure (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 26, Frederiksen further discloses that wherein said catalyst surface area is comprised by a catalyst brick (e.g. 5, 5i, 5ii) and said at least one directing element directs the exhaust to flow within said converter apparatus a distance in addition to a length of said catalyst brick (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 27, Frederiksen further discloses that wherein said at least one converter comprises a catalyst brick (e.g. 5, 5i, 5ii), said at least one directing element comprising a sleeve forming an inlet to said catalyst brick and that directs the exhaust toward at least a portion of a cross-sectional area of said catalyst brick (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 28, Frederiksen further discloses that wherein said sleeve comprises at least one of a cylindrical shape and a truncated conical shape (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 29, Frederiksen further discloses that wherein said sleeve comprises a door that opens or closes in response to a pressure of the exhaust (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 30, Frederiksen further discloses that wherein said at least one converter comprises a catalyst brick, said at least one directing element comprising a bowl mounted at least partly over an outlet of said catalyst brick (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 31, Frederiksen further discloses that wherein said bowl directs the exhaust toward at least a potion of a cross-sectional area of said catalyst brick (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 32, Frederiksen further discloses that wherein said bowl directs the exhaust to flow alongside said catalyst brick (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 33, Frederiksen further discloses that wherein said bowl comprises a door that opens or closes in response to a pressure of the exhaust (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Regarding claim 34, Frederiksen further discloses that wherein said at least one converter comprises a catalyst brick mounted in a canister, said at least one directing element comprising at least one end wall of said canister (e.g. See Figs. 1, 4-6, and 8-11; col. 5, lines 45-65; col. 9, lines 15-67; col. 10, lines 1-65).

Response to Arguments

Applicant's arguments filed October 3, 2005 have been fully considered but they are not completely persuasive. ***Claims 1-34 are pending.***

Applicant's cooperation in explaining the claims subject matter more specific to overcome the claim rejection is appreciated.

Applicants' s arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection as discussed above.

Applicants have argued that Klopp does not teach or suggest Applicants's claimed invention. More specifically, Applicants assert that the reference to Klopp fails to disclose the step of "*directing exhaust in upstream and downstream directions to pass more than once through the predefined length through at one of the at least one catalyst brick*". The examiner respectfully

disagrees, in Figures 6a, 6b, and 7b; and column 7, lines 64-67, and column 8, lines 1-60, Klopp has clearly disclosed that "As shown in FIGS. 6a and 6b, ***a gas flow is periodically reversed as it enters the container 12 of the catalytic converter.*** ...The solid arrows in FIG. 6a show that the exhaust gases from the engine are introduced in the exhaust gas inlet 16 and enter the intake cavity 32, pass through the other one of the openings 48 at the right front (not shown), downwardly into the first section 60 of the container 12, passing through the catalytic monoliths (not shown) therein. ***When the exhaust gases reach the bottom of the container 12, they enter the second section 62 of the container. The broken arrows in FIG. 6a show that the exhaust gases that entered the second section 62 of the container 12 flow upwardly and through the one of the openings 48 which is at the left rear and enter the exhaust cavity 34***. The exhaust gases are then discharged to a tail pipe via the exhaust gas outlet 18. .... *The broken arrows in FIG. 6b show that the exhaust gases having entered the intake cavity 32 flow through one of the openings 48 at the right rear and downwardly into the second section 62 of the container 12,* ***passing through the catalytic monoliths (not shown), reaching the bottom of the container 12 and entering the first section 60. The solid arrows in FIG. 6b show that the exhaust gases in the first section 60 flow upwardly and through the other one of the openings 48 which is at left front and enter the exhaust cavity 34.*** The exhaust gases are then discharged to a tail pipe via the exhaust gas outlet 18. By moving the valve between the first and the second position at intervals determined by the controller, *a desired temperature profile will develop along the series of the catalyst monoliths 70-74. The exhaust gases pass through the monoliths 70, 72 and 74 in alternating directions, contacting the catalytic material.* The monolith 70 has, for example, a lower cell density of 100 cpsi, its heat capacity is therefore higher and the monolith is better

protected from thermal stress. *A monolith with low cell density and high heat capacity is able to withstand exposure to high temperature exhaust gases in the upstream of the exhaust gas flow. When the exhaust gases flow into monoliths 72 and 74 which have higher cell density, they are exposed to more catalyst and the conversion performance is therefore more efficient.* As the exhaust gases flow through in the monoliths 70, 72 and 74 in both of the first and second sections 60, 62 and reach the top of the container 12, a large proportion of the noxious substances in the exhaust gases are converted into innocuous substances ". It is clearly that Kloop has show the steps of directing exhaust in *upstream and downstream* directions to pass more than once through the predefined length through at one of the at least one catalyst brick.

Claims 9-13, and 25-34 have been considered but are moot in view of the new ground(s) of rejection as discussed above.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
January 19, 2006

Binh Q. Tran
Patent Examiner
Art Unit 3748